

REMARKS

Claims 5, 8 and 11, as amended, and 12-14 remain in this application for the Examiner's review and consideration. Claim 6 has been canceled from consideration with the present application without prejudice. Claims 1-4, 7 and 9-10 were previously canceled from consideration with the present application without prejudice. The applicants respectfully request reconsideration and allowance of this application in view of the above amendments and the following remarks.

The objection to claims 5, 6, and 8 because of in-formalities has been withdrawn.

Claims 5 and 6 were rejected under 35 U.S.C. § 103(a) as being unpatentable over JP Publication No. 2002-129366A to Shimura et al. ("Shimura") in view of U.S. Patent No. 7,279,089 to Vercammen ("Vercammen"). It was asserted that Shimura teaches adding amine to water going to a boiler and that Vercammen teaches the use of choline as a corrosion inhibitor for metals. The applicants respectfully request that this rejection be withdrawn for the reasons previously presented and for the following reasons.

Claim 6 has been canceled from consideration with the present application, rendering this rejection moot with respect to claim 6. Claim 5 has been amended to recite that the quaternary ammonium compound is added in the range of 0.4 - 4mg/L to feed water which contacts the inside of the steam generating unit such that a pH value of the feed water is controlled to 8.5 - 9.5. Support for this amendment can be found in the specification, for example at page 20, lines 2-6.

The combination of Shimura and Vercammen fails to disclose all of the elements of the present invention as currently recited in claim 5. Even given the combination of Shimura and Vercammen, one of ordinary skill in the art would not be able to achieve the present invention, because the step of adding the quaternary ammonium compound in the range of 0.4 - 4mg/L to

feed water which contacts the inside of the steam generating unit such that a pH value of the feed water is controlled to 8.5-9.5 is not disclosed in either Shimura or Vercammen. Therefore, the present invention as currently recited in claim 5 is not rendered obvious based on the combination of Shimura and Vercammen, and the applicants respectfully request that this rejection be reconsidered and withdrawn.

Claims 8 and 11-14 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,965,785 to Braden *et al.* ("Braden") in view of Vercammen. It was asserted that Braden teaches a process of adding amines to a liquid that comes in contact with an atmospheric pipestill tower and that Vercammen teaches the use of choline. The applicants respectfully request that this rejection be withdrawn for the reasons previously presented and for the following reasons.

The combination of Braden and Vercammen fails to disclose or teach all of the elements of the present invention as currently recited in claims 8 and 11-14. Claims 8 and 11 are the only independent claims, and claims 12-14 each depend directly from claim 11. Claim 8 is directed to a method for preventing metal corrosion in an atmospheric distillation column for a petroleum refining process and has been amended to recite that only the quarternary ammonium compound is added to the fluid. Support for this amendment can be found in the specification, for example at page 17, lines 6-7. Claim 11 is directed to a method of inhibiting hydrogen chloride formation in a crude oil atmospheric distillation unit and has been amended to recite that only (β -hydroxyethyl) trimethylammonium hydroxide is added to the desalted crude oil. Support for this amendment can be found in the specification, for example at page 24, lines 20-23.

Braden is directed to inhibiting corrosion in systems of condensing hydrocarbons which contain water and chlorides and teaches inhibiting corrosion on the internal metallic surfaces of a condensing system (col. 18, line 26). Braden uses blends of amines, and according to Braden,

the amine blend is custom matched to the condensation pattern (col. 10 lines 18-19). Moreover, the candidate formulation of amines will have to be revised and tested several times to determine the best formula (col. 10 lines 42-44). Braden also teaches that if the crude oil composition used in the machinery is changed, the amine blend formula must be changed to maintain optimal control (col. 10, lines 46-48). In Braden, an amine will be very effective in one sector of the condensation zone and less effective in another depending on its temperature versus its vapor/oil/water solubility partition characteristics (col. 10 lines 19-22). In addition, several properties and characteristics must be considered when selecting amines for the blend packages to be used (col. 9 lines 12-13). However, Braden states that there is still much of what goes on in the system that is not fully understood so that candidate amine blends must be tested (col. 10 lines 27-28).

Therefore, Braden is directed to the use of blends of the neutralizing amines of the prior art that are ordinarily used as pH controllers. By contrast, in the present invention as currently recited in claims 8 and 11 only the quaternary ammonium compound (or choline) is added to fluid (or desalted crude oil). As a result, the quaternary ammonium compounds of the present invention can efficiently prevent corrosion even when added in small quantities. By contrast, Braden teaches that blends of amines are used in order to inhibit corrosion on the internal metallic surfaces of a condensing system. Therefore, Braden teaches away from the use of a single compound of the present invention. In addition, modifying the blends of Braden with a single compound as recited in the present invention would render Braden unsuitable for its intended purpose.


These shortcomings of Braden are not remedied by reference to Vercammen. The additive of Vercammen is not analogous to the blends of Braden, and there is no teaching as to how the single additive of Vercammen can be simply substituted for the custom matched amine

blend of Braden. As was discussed above, Braden actually teaches away from the use of a single additive, as the single additive is not as likely to achieve the targeted benefits of the custom amine blend of Braden. Moreover, substituting the single additive of Vercammen for the custom amine blend of Braden would render the method of Braden unsuitable for its intended purpose. Therefore, the present invention as currently recited in claims 8 and 11-14 is not rendered obvious by the combination of Braden and Vercammen, and the applicants respectfully request that the rejections of claims 8 and 11-14 under 35 U.S.C. 103(a) be reconsidered and withdrawn.

In view of the foregoing, the applicants submit that this application is in condition for allowance. A timely notice to that effect is respectfully requested. If questions relating to patentability remain, the examiner is invited to contact the undersigned by telephone.

A Request for Continued Examination (RCE) and a Petition for a Two-Month Extension of Time for the submission of the RCE along with provisions for the payment of the prescribed fees are being submitted herewith. No other fees are due. If any other fees are in fact due or if there are any problems with the payment of fees, please charge any underpayments and credit any overpayments to Deposit Account No. 50-1147.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'DGP', is written over a horizontal line.

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